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HEADLINE: Keeping up with the competition

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BODY:

America's most valuable economic asset, its sharp competitive edge in science and technology, is getting dull. While things are fine today, the key to our future prosperity is at risk.

The United States is simply not matching the priority other nations are giving to educating their youth in science and technology and supporting basic research. If we don't move quickly to reinvigorate our science and technology enterprise, we'll fall too far behind and let our leadership slip away.

For Maryland, the stakes are especially high. The state's economy is deeply tied to high-tech and knowledge-based businesses. Of all states, it has the highest fraction of its work force in science and technology, 5.9 percent. The good news is that Maryland can lead the way to a solution because of its industrial, educational and research strengths.

While the United States can't offer wages as low as competitor nations, it can succeed by pressing our capacity to innovate. Basic research discoveries, creation of new technologies and promotion of scientific curiosity in our youth can maintain America as a country where technological breakthroughs are expected.

But the warning signs are already flashing red, and national and state policymakers should heed them. A new report from a National Academy of Sciences committee, on which I served, warns that the "scientific technical building blocks of our economic leadership are eroding" and stresses the need for "shoring up the basics."

The report, "Rising Above the Gathering Storm," points to the poor performance by American children in science and math compared to their peers in competing nations, the movement of high-tech jobs overseas and increased technological innovation in other countries. Other nations are adopting the American model just as we are letting go of it. The antidote is found in a series of 10 steps calling for significant new support for education and basic research efforts, as well as national policies to encourage innovation.

Several of these steps are intended to vastly improve our children's science and math education at all levels, to pack the pipeline and fill the talent pool to meet the future technological needs of America. Other recommendations seek to

make sure American universities remain the magnets that attract top talent from other nations. A third set of actions is intended to increase funding for basic research, the proven path to innovation. Finally, the report recommends policy changes that will attract investment dollars and reward innovation.

For example, the report calls for full scholarships to recruit 10,000 science and math teachers each year. It recommends a 10 percent increase in the federal investment in basic research annually for seven years. Also, it calls for reforms to make it easier for international students involved in basic research in non-security areas to get visas and stay to advance our national competitiveness.

Our current lead in science and technology goes back to basic research and investments made decades ago. Although commitments have waned, those investments have given us the research infrastructure we need to preserve our leadership.

Universities are a vital junction in this process. Students, faculty, scholars, industry and government come together in university settings to discover, create and innovate. It is where breakthroughs begin. It's the new frontier.

University labs are growing hot new technologies. You may not know much about nanotechnology, for example, but it will eventually generate an array of super-tiny machines and medical devices. As a nation, we need to be in on the ground floor of developing technologies and ultimately deliver them to the marketplace. The high-paying jobs will go to those who control new key technologies. It is as simple as that.

Beyond this, we have to nourish scientists' imaginations and simple curiosity. NASA's Deep Impact mission, led by the University of Maryland, shot a spacecraft into a comet about 80 million miles from earth seeking to understand how our solar system was formed. Another research team has created an ingenious 10-foot diameter steel ball that mimics the earth and its molten core, giving us a chance to learn how our planet's magnetic field is created.

Time and again, scientific curiosity has translated into important new technology. The laser, transistors, X-rays and countless other developments came from scientific discovery. Investment in basic research requires faith that ultimately pays off, helping to keep our nation competitive and at the forefront. It always has. That's why it's so vital that national and state policymakers renew commitments to maintaining our technological edge - our basic research.

Washington is beginning to get this message. The National Academy's warnings have generated competing bipartisan legislative investment proposals.

Equally important, Annapolis has taken an early lead on the issue. Maryland is one of the first states to hire a high-level adviser focusing on technology competitiveness issues. This can help the state move quickly on policies intended to improve public school education, research capabilities and technological development. State government needs to make these priority concerns in order to drive the state's high tech economy even higher.

With our future quality of life at stake, we as a nation must craft policies and find the resources to make the United States unchallenged in science and technology.

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